

ART. XIX.—*A Treatise on Therapeutics, comprising Materia Medica and Toxicology, with especial reference to the application of the physiological action of drugs to clinical medicine.* By H. C. WOOD, JR., M.D., Professor of Botany and Clinical Lecturer on Diseases of the Nervous System in the Medical Department of the University of Pennsylvania, etc. 8vo. pp. 578. Philadelphia: J. B. Lippincott & Co., 1874.

THE progress of medicine, from the blind guessing of empiricism towards the goal, still far distant but not undiscernible, of scientific certainty, can nowhere be traced with greater ease or interest than in the treatises on materia medica and therapeutics which have appeared, with their offers of healing for the nations, in countless numbers, from the time that Nechepsus, six hundred and thirty years before Christ, wrote that "a green jasper, cut into the form of a dragon surrounded with rays, if applied externally, would strengthen the stomach and organs of digestion," to the appearance of the treatise before us. The materia medica of Galen, in which, according to his celebrated hypothesis, the properties of all medicines are stated to depend upon their four cardinal qualities, heat, cold, moisture, and dryness, and in which medicines are advised for the treatment of diseases in proportion as the latter are hot, cold, moist, or dry, reflected the speculative character of the therapeutics of his age. The materia medica of Paracelsus, with its extraordinary doctrine of signatures, was an apt illustration and natural outgrowth of mediæval medicine. Nicholas Culpeper's Physicians' Library, with its preface "Astrologo-Physical Discourse of the Humane Virtues in the Body of Man," and its description of the "roots, herbs, seeds, living creatures, stones, tears, barks, fruits, spirits, physical wines, excrements, oyls, ointments, minerals, plasters," etc., mirrored the absurd conceits and strange hypotheses of the therapeutics of the seventeenth century. Jonathan Pereira's *Elements of Materia Medica and Therapeutics*, a magnificent monument of human industry and learning, indicate perhaps more vividly than any other work the great advance which the medicine of the first part of the nineteenth century made over its predecessors, but they also show how little scientific accuracy there was in the application of drugs to the treatment of disease during the same period. Dr. H. C. Wood's *Treatise on Therapeutics, Materia Medica, and Toxicology* (which has just appeared), indicates the physiological direction that recent therapeutical study has taken, and fairly presents the acquisitions that therapeutics has made in following out its chosen path.

Dr. Wood's *Treatise* is a handsome, large octavo volume, of five hundred and seventy-eight pages, dedicated to his uncle, the venerable Dr. George B. Wood, whose name is so honourably associated with American medicine. It is, as stated by the author in his preface, an attempt to present to the medical profession

"A book into which should be gathered the many scattered facts in regard to the physiological action of medicine—a book in which an attempt should be made to sift the true from the false, to reconcile seeming differences, to point out what we know and what we do not know, and to give a platform from which investigators might start forward without the necessity of being, as is so often the case, ignorant of what was already achieved, or of spending a great deal of time in a wild hunt through the almost boundless, but often scattered and inaccessible ranges of Continental literature."

The book commences with a brief introduction, in which pharmacy, the

United States Pharmacopœia, modes of administering drugs, influences that modify the action of remedies, and rules for doses are referred to, and a classification of the materia medica presented. The latter, which Dr. Wood properly styles only "a convenient row of pegs upon which to hang our ideas and facts," is substantially a physiological one. By it, remedies are arranged in three large divisions: *First*, general remedies, such as astringents, tonics, cardiac stimulants, etc.; *second*, local remedies, such as emetics, cathartics, diuretics, etc.; and *third*, substances which act externally to the body, as antacids, anthelmintics, etc. The names of some of the classes of these divisions are themselves hints of the new direction that the study of the materia medica has taken. Analgesics, mydriatics, anæsthetics, depresso-motors, oxytocics, and digestants would have been unintelligible terms to Culpeper, and possibly some of them to the philosophic Donald Monro. The chief part of the book is, of course, devoted to a description and discussion of the various agents of our present materia medica. It should be mentioned that drugs alone are included in this description. Climate, occupation, exercise, mind, electricity, food are only incidentally referred to by Dr. Wood, not described as remedial agents.

It adds to the value of the work, that it is not encumbered with needless learning. Very little is said about the history of the drugs that are described. Students who desire to learn the pedigree and biography of the drugs they use, or to be informed concerning the various transformations that drugs have undergone from the time of *Æsculapius* till now, will find little to satisfy them in the treatise that is before us. In like manner, very little is said about the botanical characteristics or chemical properties of drugs. The reader is properly permitted to gather this sort of information from professed works on botany and chemistry. And so with regard to pharmacy, the importance of pharmaceutical manipulations is recognized, but they are not described. This plan, which excludes the history, botany, chemistry, and pharmacy of the materia medica from discussion and consequently brings the reader directly without preface to a study of the physiological action of each drug, is one of the best features of Dr. Wood's book. The medical student and practitioner desire to get at the preparations they are to employ at the bedside as directly as they can, and to be introduced with the least possible ceremony to their physiological action and therapeutical use. This course Dr. Wood has steadily pursued.

Another excellent feature of the book is the space that is allotted to describing the physiological action of drugs. Too little attention has been paid, hitherto, to this fundamental part of the materia medica. Eleven pages, for example, are given to an analysis of the physiological action of the sulphate of quinia, and less than half that number of pages to an account of its therapeutical application. The latter is a corollary from the former, and can be stated in a few words, if the physiological is well made out and clearly stated. All the important drugs, such as opium, belladonna, digitalis, alcohol, aconite, etc., are discussed in a similar way, that is, first physiologically and then therapeutically.

It would be impossible or difficult to estimate accurately the amount of labour that observers in Europe and this country have spent during the last twenty or twenty-five years in their efforts to solve the problem of the physiological force of drugs and to ascertain the mechanism of their therapeutical action. Physiologists have endeavoured to trace with absolute certainty the time and rate and mode of the entrance of drugs into, and diffusion

through, and departure from the organism; and to learn the exact phenomena that attend every step and stage of the process of drugs from the moment of entrance to the last moment of elimination, transformation, or destruction. The record of all this work is to be found chiefly in the medical journals of Europe and America, and in the various monographs upon drugs that have appeared on both sides of the Atlantic within the last quarter of a century, and especially within the last two decades. We know of no book in the English language which has collected so thoroughly the best work in this direction of the last twenty years and arranged it so well. While it is not exhaustive in this way, it contains the best that has been done and leaves out very little of value. The *Practical Therapeutics* of Dr. Edward John Waring, which was republished in this country seven of eight years ago, we have hitherto regarded as the best treatise of the sort accessible to the English reader, but the physiological portion of Dr Wood's work is much fuller and more complete than that of his transatlantic colleague. Those who are familiar with German medicine will be reminded by the book before us of Nothnagel's recent treatise rather than of any English or American writer on *materia medica*.

It is not to be expected in a treatise of this sort that all portions of it would be of equal excellence. Some parts must necessarily be fuller and more exact than others. Such is the case with the work before us. Notwithstanding this, it may be justly said of it that while none of its articles are poor, some of them are not only good, but are admirable illustrations of physiological and therapeutical description. The articles on Belladonna, Digitalis, Aconite, Alcohol, Opium, and Indian Hemp may be mentioned in confirmation of this remark. They give in clear and distinct language excellent accounts of what has been ascertained up to the present time with regard to the physiological action and therapeutical use of these drugs. Our author's statement of the comparative value as anæsthetics of sulphuric ether and chloroform presents the anæsthetic merits and demerits of these two agents with judicial fairness. It deserves attention on both sides of the Atlantic. With regard to the first, he says:—

"As an anæsthetic, ether does not act with the rapidity and pleasantness of chloroform, but it has the advantage of safety. So dangerous is chloroform, and so safe is ether, that there is no excuse for the use of the former agent under ordinary circumstances. The reason of the safety of ether is that, unlike chloroform, it never suddenly paralyzes the heart. It may kill by inducing asphyxia, but it does so slowly, and in the great majority of cases after warnings which can be overlooked only through the most reckless carelessness." p. 245.

With regard to chloroform, he remarks:—

"As an anæsthetic chloroform possesses the advantages of quickness and pleasantness of operation, smallness of dose, and cheapness. These advantages are, however, so outbalanced by the dangers which attend its use, that its employment under ordinary circumstances is unjustifiable. It kills without warning, so suddenly that no forethought, or skill, or care can guard against the fatal result. It kills the robust, the weak, the well, the diseased alike, and the previous safe passage through one or more inhalations is no guarantee against its lethal action. Statistics seem to indicate a mortality of about one in three thousand inhalations, and hundreds of utterly unnecessary deaths have now been produced by the extraordinary persistence in its use by a portion of the profession. It ought, therefore, never to be employed except under especial circumstances, as in some cases of *puerperal eclampsia*, when a speedy action

is desired, or in the field during war-time, when the bulkier anæsthetics cannot be transported." p. 251.

The solution of the problem of the proper use of alcoholic liquids must and will be finally made by the physiologist and physician, and it is the duty of the medical profession to enlighten the public upon this grave matter of therapeutics, morals, and sanitary science to the extent of their knowledge and ability. Dr. Wood's statement of the value and use of alcohol is not less important to the reformer than to the physician, and few physiologists will be found to deny its correctness.

"From what has been said," he remarks, "it is certainly deducible that alcohol in small amount is an *arterial* and *cerebral stimulant*, increasing functional activity in the nervous and circulatory apparatus; is a *food*, in the sense that it is destroyed in the system, and there performs a physiological office; is, when in sufficient quantity, a retarder of tissue changes, because it lowers animal heat independently of any action on the nervous system, and also probably checks the excretion of carbonic acid and of nitrogen. . . . If alcohol be oxidized in the body, and be a food, as it seems to me is clearly proven, it must of course generate force, measurable by the modern standard of the heat-unit. A little calculation will show the importance, or rather the great amount, of the generated force. According to Dupré one gramme of alcohol oxidized in the body evolves 7184 units of heat, whilst the same weight of lean beef gives off only 1482 units of heat. It has been estimated that 9.3 ounces of lean beef, equal to about two ounces of alcohol, will supply the necessary force to maintain the circulation and respiration of an average man for one day. That is, four ounces of strong spirit will suffice for this purpose. Since, to the ability of furnishing material whose consumption shall give power is added the ability to restrict waste and to stimulate the functions of circulation and of the nervous system, it is evident that in alcohol we have a most important means of sustaining the system during the strain of an acute exhausting disease." p. 109.

The therapeutic deductions which follow from these actions of alcohol on the human system are obvious, and need not be quoted; and it should be added that the moral and sanitary deductions are not less obvious nor less important than the therapeutic ones. When those who advocate the daily use of spirits, wines, etc. are wise enough to recognize the tremendous evils that alcohol inflicts, and those who advocate its prohibition and extermination are wise and broad enough to recognize the good it is capable of doing and has done, we may hope for a better public sentiment upon the vexed question of alcohol, and for wiser legislation with regard to it.

During our reading of Dr. Wood's treatise we had marked several other articles than those we have mentioned for comment and some for criticism and dissent, but the length which this notice has attained forbids any allusion to them. It only remains for us to refer the reader to the book itself, with the assurance that he will find it a most valuable addition to his medical library. It is a sort of work on *materia medica* and therapeutics that has been long needed both by the practitioner and student, and we congratulate the author upon his success in carrying out a most difficult undertaking. Only those who have worked among the tangled heaps of wheat and weeds that encumber the therapeutics even of the last half century, and tried to sift the grain from the chaff, can appreciate the difficulty of producing a work like the one before us.

We ought not to forget to add, in conclusion, that the typographical execution of the volume is excellent, and creditable to the house that issued it.

E. H. C.